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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,942	01/25/2001	Robert O'Brien	3005-58065	8210

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EXAMINER

POLITZER, JAY L

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/770,942

Applicant(s)

O'BRIEN, ROBERT

Examiner

Jay L Politzer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-2, 4, 6-8, 10-14, 17-18, 20-36, 47-53, 69-86, 89-96 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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1. The reply filed on 12/13/02 is not fully responsive to the prior Office Action because of the following omission(s) or matter(s): Applicant responded to the restriction requirement by electing Group I. However, Applicant failed to respond to the requirement for an election of species within Group I. . See 37 CFR 1.111. Since the above-mentioned reply appears to be *bona fide*, applicant is given **ONE (1) MONTH or THIRTY (30) DAYS** from the mailing date of this notice, whichever is longer, within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

SUMMARY OF ELECTION OF SPECIES REQUIREMENT:

This application contains claims directed to the following patentably distinct species of the claimed invention in Group I.: a general gas sample, an air sample a breath sample, exhalation from a respiratory organism, air toxics, VOCs, OVOCs, metabolites, anesthetics, aqueous and gaseous components; continuous or discrete measurements; plural parallel or serial chromatographs; focusing-carrier gases of hydrogen, helium, nitrogen, argon, carbon dioxide, air and/or methane; reducing or increasing the pressure of the carrier-pneumatic focusing gas; simultaneously with or subsequent to sample injection; using a carrier gas or compressor; one or multiple carrier gases; using

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supercritical or non-supercritical carrier-gases; continuous or discontinuous gradient elution; detectors consisting of FID, IR, FTIR, NDIR, ECD, TCD, NPD, FPD, or UV/Visible; manual or automated operation; distributed pollution sources; sample preparation by filtering, absorption or vortexing; cryogenically liquefied samples; and making eddy correlation measurements to quantify fluxes. This application contains claims directed to the following patentably distinct species of the claimed invention in Group II.: continuous or discontinuous measurements; cryofocusing prior to or subsequent to pneumatic focusing; and cryogenically liquefied, or not. This application contains claims directed to the following patentably distinct species of the claimed invention in Group III.: a downstream or upstream detector; reducing the linear flow rate or increasing the linear flow rate; a sample amount that is less than or equal to a sample coil volume; single or plural columns and detectors; operation by a neural network or expert system; and a standard chromatograph or one on a microchip.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

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Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

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Applicant is advised that the reply to this requirement to
~~be complete must include an election of the invention to be~~
examined even though the requirement be traversed (37 CFR
1.143).

SUMMARY OF GROUP I. CLAIMS AS AMENDED:

1. (Twice Amended) A method for analyzing a gas sample, comprising:
providing a gas sample or converting a sample to a gas sample;
increasing pressure applied to the sample to compress the sample
to a smaller volume and provide a pneumatically focused gas
sample; and
analyzing the pneumatically focused gas-sample by gas
chromatography.
2. (Amended) The method according to claim 1 where the gas
sample is pneumatically focused concurrently with or prior to
reaching, a separatory column.
4. The method according to claim 1 where the gas sample is an
air sample.
5. The method according to claim 1 where the gas sample is a
breath sample.
6. The method according to claim 1 where providing a gas sample
comprises continuously providing an air sample for pollution
analysis.
7. The method according to claim 1 where providing a gas sample
comprises continuously providing a breath sample for analysis.
8. The method according to claim 1 where increasing the
pressure to pneumatically focus the gas sample comprises

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increasing the pressure of the sample to a pressure of from
~~about 100 psi to about 15,000 psi.~~

10. The method according to claim 1 where increasing the pressure to pneumatically focus the gas sample comprises increasing the pressure of the sample to a pressure of from about 200 psi to about 2,000 psi.

11. The method according to claim 1 where increasing the pressure to pneumatically focus the gas sample comprises increasing the pressure of the sample to a pressure of from about 300 psi to about 700 psi.

12. The method according to claim 1 where increasing the pressure to pneumatically focus the gas sample is accomplished using a gas selected from the group consisting of hydrogen, helium, nitrogen, argon, carbon dioxide, air, or mixtures thereof.

13. (Amended) The method according to claim 1 where increasing the pressure to pneumatically focus the gas sample is accomplished using a focusing or carrier gas containing an internal standard.

~~14. The method according to claim 1 where methane in the sample~~
is used as an internal standard.

17. The method according to claim 1 where analyzing the pneumatically focused sample comprises reducing the pressure of the carrier-pneumatic focusing gas simultaneously with or subsequent to a pneumatically focused sample being injected onto a separatory column.

18. The method according to claim 1 where the gas sample is pneumatically focused using a carrier gas or a compressor at a

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first pressure and further comprising rapidly decreasing or
~~increasing pressure between a first and second pressure.~~

20. The method according to claim 17 where the pressure is reduced to 100 psi or less.

21. The method according to claim 1 where analyzing the pneumatically focused sample comprises cooling a head portion of the column prior to injecting the pneumatically focused sample onto the column.

22. The method according to claim 1 where analyzing the pneumatically focused sample comprises heating the column Subsequent to injecting the pneumatically focused sample onto the column.

23. The method according to claim 1 where analyzing the pneumatically focused sample includes eluting a pneumatically focused sample with a first carrier gas, and then eluting the column with a second carrier gas.

24. The method according to claim 1, where analyzing the pneumatically focused sample comprises reducing the focusing pressure to a lower value an then a supercritical fluid is
~~introduced gradually to replace an initial carrier gas used to~~
pneumatically focus the sample.

25. The method according to claim 23 where either the first or second gas is supercritical.

26. The method according to claim 23 where compositions of the first and second gases are changed continuously or discontinuously using gradient elution.

27. The method according to claim 23 where pressures of the first and second gases are changed continuously or discontinuously using gradient elution.

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28. The method according to claim 1 and further comprising continuously analyzing pneumatically focused samples.

29. The method according to claim 1 and further comprising averaging individual chromatograms of pneumatically focused samples.

30. The method according to claim 29 where peak locations determined from the average are used to integrate peak areas in individual chromatograms contributing to the average.

31. The method according to claim 1 where analytes from the pneumatically focused sample are determined by a detector selected from the group consisting of FID, IR, FTIR, NDIR, ECD, TCD, NPO, FP, UV/Visible detectors, and combinations thereof.

32. The method according to claim 1 where the pneumatically focused sample is parallel or serially injected onto plural parallel or serial separatory columns.

33. The method according to claim 32 where the pneumatically focused sample is analyzed by 2-dimensional chromatography.

34. The method according to claim 32 where the pneumatically focused sample is analyzed by comprehensive chromatography.

35. An automated method according to claim 1.

36. The method according to claim 35 where the method is computer controlled.

47. The method according to claim 1 where portions of the pneumatically focused sample are fed to separate columns upstream of separate, plural detectors.

48. The method according to claim 47 where the detectors are connected in series.

49. The method according to claim 47 where the plural detectors are connected in parallel.

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50. The method according to claim 1 where the pneumatically
~~focused sample is fed to plural separatory columns.~~

51. The method according to claim 50 where the separatory
columns are connected in series.

52. The method according to claim 50 where the separatory
columns are connected in parallel.

53. The method according to claim 50 where analytes are
pneumatically focused during transit between or among columns.

69. The method according to claim 1 where the gas sample is
provided as a pre-stored gaseous sample.

70. The method according to claim 1 where the gas sample
includes material selected from the group of air toxics, VOCs,
OVOCs, metabolites, anesthetics, and combinations thereof.

71. The method according to claim 1 where the gas sample is
collected at a boundary of a site for fence-line monitoring of
analytes.

72. The method according to claim 1 where providing the gaseous
sample comprises providing the sample to a column within a
period of less than one minute.

~~73. The method according to claim 73 and providing the sample~~
to a column within a period of less than about 1 second.

74. The met according to claim 55 and providing the sample to a
column within a period of less than about 1 millisecond.

75. The method according to claim 1 where the gas sample is an
exhalation from a respiratory organism.

76. The method according to claim 1 and further comprising
determining the directional distribution of pollution sources.

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77. The method according to claim 1 and further comprising using a Gaussian Plume model to determine source location, emission rate, or both.

78. The method according to claim 1 and further comprising determining analyte source location by triangulation.

79. The method according to claim 1 and further comprising removing materials from the gaseous sample prior to pneumatically focusing the sample.

80. The method according to claim 79 where materials removed from the sample are selected from the group consisting of water vapor, aerosols, ozone, NO₂, and combinations thereof.

81. The method according to claim 79 where the materials are removed by filtering, absorption, vortexing, and combinations thereof.

82. The method according to claim 1 further comprising condensing water vapor in the gaseous sample by Pneumatic Focusing.

83. The method according to claim 82 where the condensed water vapor is removed prior to analyzing the gaseous sample using an analytical device.

84. The method according to claim 83 where the condensed water vapor contains water-soluble analytes, and such water-soluble analytes are collected for continuous or discontinuous subsequent analysis.

85. The system according to claim 51 including a computer for continuously operating the system.

86. The method according to claim 1 where the sample is water sample.

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89. The method according to claim 1 where the pneumatically focused sample is separated into aqueous and gaseous components which are separately analyzed.

90. The method according to claim 1 where the pneumatically focused sample is subsequently cryogenically liquefied.

91. The method according to claim 1 wherein pneumatic focusing is used to make eddy correlation measurements to quantify fluxes.

92. The method according to claim 10 where increasing the pressure to pneumatically focus the gas sample comprises increasing the pressure of the sample to a pressure of from about 300 psi to about 1,500 psi.

93. The method according to claim 10 where increasing the pressure to pneumatically focus the gas sample comprises increasing the pressure of the sample to a pressure of from about 1000 psi to about 10,000 psi.

94. The method according to claim 1 where portions of the pneumatically focused sample are fed to separate columns upstream of a single detector.

~~95. The method according to claim 94 where the separate columns~~
are connected in series.

96. The method according to claim 94 where the separate columns are connected in parallel.

Please review these claims carefully as I have corrected numerous typographical errors.

INQUIRIES:

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr.

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Jay L. Politzer whose telephone number is (703) 305-4930
and whose facsimile number is (703) 308-7382

2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Hezron E. Williams, can be reached at (703) 305-4705.
3. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4900.


DANIEL S. LARKIN
PRIMARY EXAMINER